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EXAMINER

ROSSI, JESSICA

ART UNIT PAPER NUMBER

1733

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 09/961,084 | Applicant(s) MCKAGUE, ELBERT LEE | |
| | Examiner Jessica L. Rossi | Art Unit 1733 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-24 is/are pending in the application.
- 4a) Of the above claim(s) 20-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-19 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment dated 11/20/03. Claim 3 was canceled. Claim 24 was added. Claims 1-2 and 4-24 are pending. Claims 20-23 were withdrawn from further consideration in the previous office action.
2. The rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Mead (of record) in paragraph 9 of the previous office action has been withdrawn because of the added limitations.
3. The rejection of claim 15 under 35 U.S.C. 103(a) as being unpatentable over Mead in view of Effing (of record) and the collective teachings of Sharp (of record) and Davis (of record), as set forth in paragraph 15 of the previous office action, has been withdrawn because of the added limitations.
4. The allowability of claim 10, as set forth in paragraph 18 of the previous office action, has been withdrawn because of the discovery of prior art upon further searching.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for inserting fasteners into the skin panel while the panel is in an uncured or partially cured state (p. 9, lines 17-23), it does not reasonably provide enablement for inserting fasteners into the skin panel when the panel is cured. The specification does not enable any

person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Applicants are asked to clarify.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 5 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, it is unclear how the skin panel can be formed from a cured composite material when partial-curing of the skin panel takes place after the forming elements and stiffening panel have been placed thereon, as set forth in claim 1. Furthermore, it is unclear how the skin panel can be made from a cured composite material when the present specification specifically states that the skin panel must be in an uncured or partially-cured state to allow for the insertion of fasteners (p. 9, lines 17-23). Applicants are asked to clarify. It is suggested to redraft claim 5 to state that the skin panel is formed from an uncured composite material.

Regarding claim 13, it is unclear how the skin panel can be formed from a partially-cured composite material when partial-curing of the skin panel takes place after the forming elements and stiffening panel have been placed thereon, as set forth in claim 10. Applicants are asked to clarify. It is suggested to redraft claim 13 to state that the skin panel is formed from an uncured composite material.

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 1-2, 4-5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead (US 4675061; of record) in view of the collective teachings of Fairbanks (US 6106646) and Campbell et al. (US 5827383; provided in IDS).

With respect to claim 1, Mead is directed to making a composite structure having utility in various industries (i.e. aircraft; column 1, lines 15-16). The reference teaches positioning a plurality of forming elements 22 on a skin panel 12 formed from an uncured resin-impregnated layer (column 2, lines 65-68) in a predetermined configuration (abstract), disposing a stiffening panel 14 formed from an uncured resin-impregnated layer (column 2, lines 65-68) outwardly from the forming elements (Figure 3), and curing the skin panel and stiffening panel to bond the same at their contact regions (column 2, lines 25-30).

The reference is silent as to partially curing the skin panel and stiffening panel to create contact regions between the same and coupling the skin panel and stiffening panel with a plurality of fasteners.

It is known in the art to make a composite structure useable in the aircraft industry by stacking a plurality of uncured resin-impregnated layers 12, partially-curing the layers, inserting fasteners (i.e. z-pins) through the partially-cured layers, and final curing the layers to bond the same, as taught by Fairbanks (Figure 1; column 1, lines 28-35 and 43-50; **column 2, lines 18-25**; column 3, lines 26-33 and 35 and 40; column 4, lines 56-65; **column 5, lines 3-5**). The reference acknowledges composite materials being weaker in the z-axis direction and therefore inserts fasteners through the layers in this direction to prevent delamination of the layers (column 1, lines 43-45). The reference eliminates prior art problems with inserting fasteners through

uncured composite materials by partially-curing the layers before inserting the fasteners (column 1, lines 43-50 and 53-54).

It is also known in the art to make a composite structure useable in the aircraft industry where a joint formed between resin impregnated layers is reinforced by inserting pins through the layers in the z-axis direction while the layers are in a partially-cured state (note reference teaches material being "pre-preg" material wherein skilled artisan would have readily appreciated that "pre-preg" denotes a partially-cured state in the art; see US 5403537, column 1, lines 39-42), followed by final curing of the layers, as taught by Campbell (**Figure 5**; column 1, lines 13-16; column 2, line 66 – column 3, line 4; column 4, lines 37-38).

Therefore, it would have been obvious to the skilled artisan at the time the invention was made to partially cure the skin panel and stiffening panel of Mead to create contact regions between the same and couple the panels with a plurality of fasteners after partial-curing but before final curing because such is known in the art, as taught by the collective teachings of Fairbanks and Campbell, wherein the fasteners can be easily inserted due to the partially-cured state of the layers (Fairbanks; column 1, lines 43-50 and 53-54) and delamination of the composite can be prevented due to the presence of the fasteners (Fairbanks; column 1, lines 43-45).

Regarding claim 2, Mead teaches removing the forming elements 22 after curing (column 2, line 31).

Regarding claim 4, the collective teachings of Fairbanks and Campbell teach the fasteners being z-pins proximate the contact regions.

Regarding claim 5, Mead teaches the skin panel being an uncured composite material (column 2, lines 25-30).

Regarding claim 8, Mead teaches the forming elements being positioned in a corrugated configuration (Figure 3; abstract).

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead and the collective teachings of Fairbanks and Campbell et al. as applied to claim 1 above, and further in view of the collective teachings of Sharp (US 3669821; of record) and Wiens et al. (US 4368674; of record).

Regarding claim 6, Mead is silent as to disposing the stiffening panel by spraying. Selection of a particular method for forming the panel would have been within purview of the skilled artisan at the time the invention was made.

However, it is known in the art to make a composite structure comprising a skin panel 27 and a stiffening panel 26 (Figure 5) both made from resin-impregnated fibers that are deposited by spraying (Figure 6), as taught by Sharp (column 2, lines 67-70; column 3, lines 3-5 and 36-37 and 55-57). It is also known in the art to make a composite structure comprising bonded panels having reinforcing elements therebetween wherein the outer panel is formed by spraying resin impregnated fibers onto the surface of the reinforcing elements and inner panel, as taught by Wiens (column 5, lines 28-39).

It would have been obvious to the skilled artisan at the time the invention was made to form the stiffening panel of Mead by spraying resin impregnated fibers onto the surface of the forming elements and skin panel because such is known in the art, as taught by the collective

teachings of Sharp and Wiens, wherein this would eliminate the need to cut a pre-formed panel to the same size as the skin panel.

12. Claims 7 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead and the collective teachings of Fairbanks and Campbell et al. as applied to claim 1 above, and further in view of Effing et al. (US 5238725; of record).

Regarding claim 7, Mead is silent as to the stiffening panel comprising discontinuous fibers. Selection of particular fibers would have been within purview of the skilled artisan at the time the invention was made. However, it would have been obvious to use discontinuous fibers because it is known in the art to make a composite structure useable in the aircraft industry from panels comprising a plurality of discontinuous fibers disposed in a resin matrix, as taught by Effing (Figure 4; column 1, lines 11-12 and 60-65).

With respect to claim 10, all the limitations were addressed above with respect to claims 1 and 7, except creating second contact regions between the forming elements and the stiffening panel during partial-curing of the panels and inserting the fasteners proximate the contact regions that were formed between the skin panel and stiffening panel during partial-curing of the same.

The skilled artisan would have appreciated that second contact regions would be created between the forming elements and stiffening panel during partial curing (Figure 3).

It would have been obvious to the skilled artisan at the time the invention was made to insert the fasteners proximate the first contact regions because such is known in the art, as taught by Campbell (Figure 5), wherein this serves to reinforce the joint formed between the layers.

Regarding claim 11, Applicants are invited to reread the rejection set forth above for claim 2.

Regarding claim 12, Applicants are invited to reread the rejection set forth above for claim 4.

Regarding claim 13, Applicants are invited to reread the rejection set forth above for claim 5.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, the collective teachings of Fairbanks and Campbell, and Effing as applied to claim 10 above, and further in view of the collective teachings of Sharp and Wiens et al.

Regarding claim 14, Applicants are directed to paragraph 11 above.

14. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead and the collective teachings of Fairbanks and Campbell et al. as applied to claim 1 above, and further in view of the collective teachings of Bleasdale (US 3419457; of record) and Yasui (US 5904992; of record).

Regarding claim 9, Mead is silent as to positioning the forming elements in a waffle configuration. Selection of a particular configuration would have been within purview of the skilled artisan. However, it would have been obvious to use a waffle configuration as an alternative to a corrugated one because imparting such a configuration to a stiffening panel is known in the art, as taught by the collective teachings of Bleasdale (Figure 1; column 2, lines 19, 23, 29-30, 33-35) and Yasui (Figure 13; column 6, lines 49-50).

15. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead in view of the collective teachings of Sharp and Davis (US 4865788; of record) and the collective teachings of Fairbanks and Campbell et al.

With respect to claim 15, all the limitations were addressed above with respect to claims 1 and 10, except forming the stiffening panel on a tool having a configuration substantially the same as the predetermined configuration and heating the stiffening panel to a state sufficient to enable handling of the same while maintaining its configuration.

It is known in the art make a composite panel structure by bonding a stiffening panel 26 to a skin panel 27 by simultaneous curing of the panels wherein prior to contact the stiffening panel is placed on a tool surface having a corrugated configuration and heated to impart the configuration to the panel while partially curing the same, as taught by Sharp (Figure 5; column 3, lines 2-10). This partial curing allows the shape of the panel to be maintained while it is removed from the mold and placed into contact with the uncured skin panel before curing of the panels, as taught by the collective teachings of Sharp (column 3, lines 11-16) and Davis (column 1, lines 27-35).

It would have been obvious to the skilled artisan at the time the invention was made to place the stiffening panel of Mead on a tool having the predetermined configuration and heat the panel to a state sufficient enough to enable handling of the same while maintaining its configuration because such is known in the art, as taught by the collective teachings of Sharp and Davis, wherein only the claimed benefits would be achieved (Sharp, column 3, lines 11-16; Davis, column 1, lines 27-35).

Regarding claim 16, Applicants are invited to reread the rejection for claim 2 set forth above.

Regarding claim 17, Applicants are invited to reread the rejection for claim 4 set forth above.

Regarding claim 18, Applicants are invited to reread the rejection for claim 8 set forth above.

16. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, the collective teachings of Sharp and Davis (US 4865788; of record), and the collective teachings of Fairbanks and Campbell et al. as applied to claim 15 above, and further in view of Bleasdale and Yasui.

Regarding claim 19, Applicants are directed to paragraph 14 above.

17. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, the collective teachings of Sharp and Davis (US 4865788; of record), and the collective teachings of Fairbanks and Campbell et al. as applied to claim 15 above, and further in view of Effing.

Regarding claim 24, Applicants are directed to the rejection set forth for claim 7 in paragraph 12 above.

Response to Arguments

18. Applicant's arguments filed 11/20/03 have been fully considered but they are not persuasive.

19. On page 8 of the arguments, Applicants traverse the 112, 2nd paragraph, rejection set forth in the previous office action regarding claim 5. Applicants argue that the skin panel can be formed from a cured composite material and then cured again.

Applicants are invited to reread the 112, 2nd paragraph, rejection set forth in paragraph 8 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jessica L. Rossi** whose telephone number is **571-272-1223**. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard D. Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jessica L. Rossi
Patent Examiner
Art Unit 1733



JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300